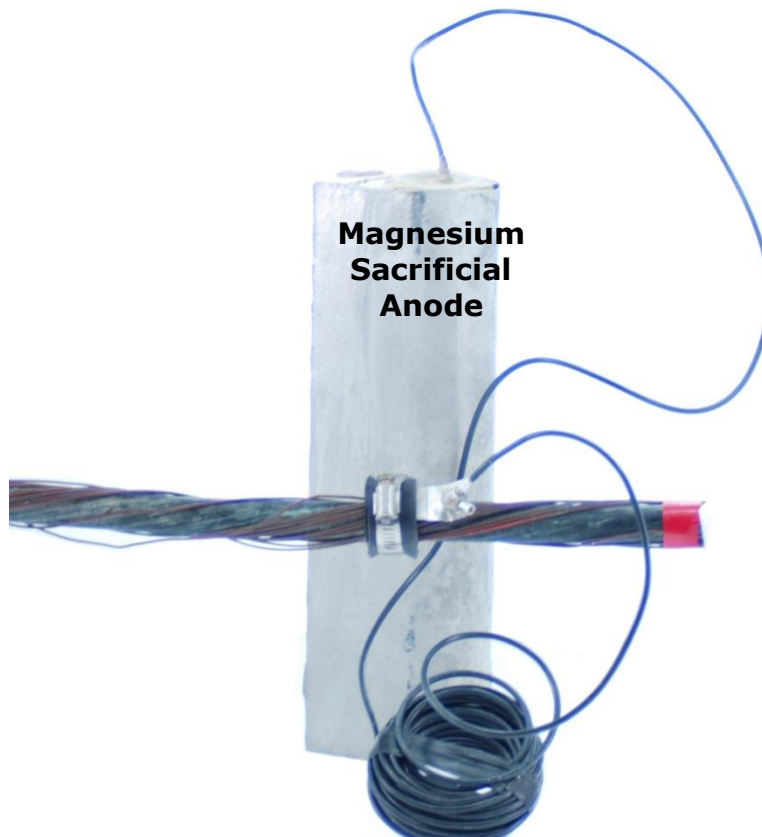


Rejuvenation Instructions

#810 – Neutral Corrosion Repair



This NRI covers the following:

- How to correct and mitigate neutral corrosion.

Trademarks: <http://www.novinium.com/trademarks/>

Patents: <http://www.novinium.com/patents/>



WARNING: It is dangerous working around energized high-voltage systems, pressurized systems, and chemicals. Always work in accordance to the Novinium Field Operations Safety Handbook (FOSH) or other local governing safety standards.

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Repairing Neutral Corrosion

1. Excavate the neutral corrosion site.

- Excavate the neutral corrosion site until solid neutrals are exposed on both ends of the corrosion site.

2. Excavate a hole perpendicular to the cable axis.

- Excavate a 9 inch (229mm) diameter hole perpendicular to the cable axis to receive a sacrificial magnesium anode.
- The end of the hole should terminate no less than 6 ft (2 meters) from the cable.
- The hole may be vertical, horizontal, or anywhere in between.

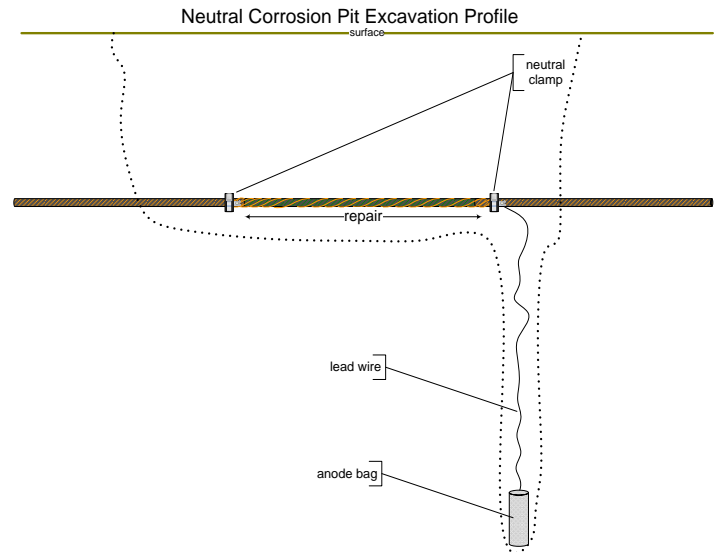


Figure 1: Neutral corrosion pit excavation profile.

3. Clean the neutrals.

- Clean embedded soil from the neutrals and gently wire brush the copper on either side of the damaged neutral wires.
- Use hot gloves and rubber boots and treat both ends of the cable as energized.
- After cleaning, install a bonding jumper of at least the same size as the cable's conductor between the neutrals on both ends.

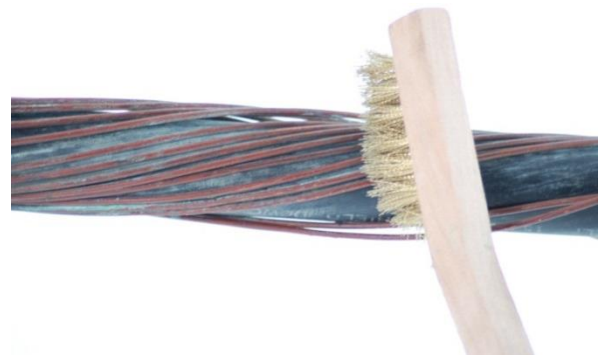


Figure 2: Clean embedded soil from neutrals.

4. Attach an equipotential grounding mat to one end of the cable.

- a. Attach an equipotential grounding mat to a good system neutral on one end of the cable.
 - The Basic EQUI-MAT™ Personal Protective Ground Grid (C600-2850) is available from Chance (Hubbell Power Systems).
- b. Place the mat in a location so that anyone executing the following instructions can remain on the mat at all times when in contact with the cable.



Figure 3: Equipotential grounding mat.

5. Wrap new copper wires over the corroded neutrals.

- a. Concentrically wrap new copper wires with a total rated ampacity greater than the original neutral over the corroded length.
- b. Use zip ties every 6 inches (15 cm) to hold the neutrals in place and hold the neutrals in tight contact with the cable's insulation shield.

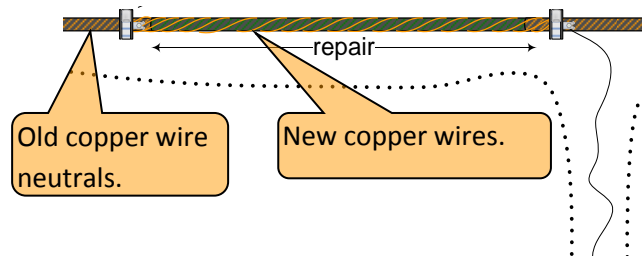


Figure 4: New copper wires wrapped around the cable to replace corroded neutrals.

6. Attach a neutral clamp at both ends of the new copper.

- a. Attach a neutral clamp (nbn: 1-NC-Nclamp) at both ends of the new copper so that both the old and new copper are in direct electrical contact with the tinned-copper inner sleeve.
- b. Tighten the hose clamp snug, but do not over-tighten.



Figure 5: Neutral clamp attached to the new copper.

7. Place a sacrificial anode into the bottom of the hole.

- a. Place a sacrificial anode (**npn: 1-NC-ANODE09**) into the bottom of the hole that was excavated in step 2.
- b. Connect the wire lead from the anode to one or both of the neutral clamps.
- c. Crimp or solder the connection to make it permanent.

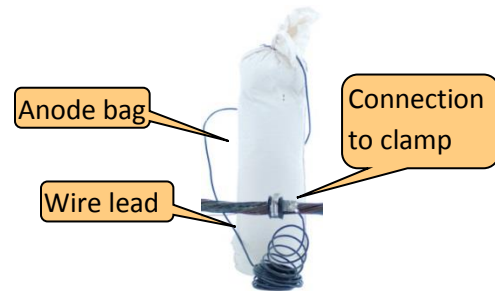


Figure 6: Sacrificial anode.

8. Fill in the excavated hole and pit.

- a. Fill in and pack soil into the hole with the magnesium anode.
- b. Fill in the excavated pit.